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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/938,838	08/27/2001	Kuen-dong Ha	1568.1023	1095
21171	7590	03/24/2004	EXAMINER	
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			PERRY, ANTHONY T	
			ART UNIT	PAPER NUMBER
			2879	

DATE MAILED: 03/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/938,838	HA ET AL.	
	Examiner Anthony T Perry	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 15 January 2004.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-40 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 27 August 2001 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION***Specification***

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13-22, 29-30, and 33-34 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically claims 13 and 14 include the limitation of the values of the mask assembly that satisfying the relation of 0.1 less than or equal to $(A \times H^2 \times \Delta \alpha \times 10^4) / I$ less than 1, where I is a second order section modulus in a X direction. It is unclear to the examiner what the second order section modulus represents and therefore the limitation that the relation: 0.1 less than or equal to $(A \times H^2 \times \Delta \alpha \times 10^4) / I$ less than 1, is satisfied cannot be determined.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for

patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 23, and 39-40 is rejected under 35 U.S.C. 102(b) as being anticipated by Ito et al. (US 5,751,098).

Regarding claim 1, Fig. 7 of the Ito reference discloses a mask frame assembly for a color cathode ray tube, comprising first and second support members spaced out a predetermined distance. Fig. 7 teaches the use of first and second resilient support members installed between the first and second support members supporting the first and second support members with each of the first and second resilient support members comprising supports 24 fixed to the first and second support members and a connection portion 4 connecting the supports. A mask is installed at the first and second support members such that tension is applied thereto. The mask has a plurality of electron beam through holes. The mask frame assembly further includes a compensating unit 242 connected between the first and second support members that has a lower thermal expansion coefficient than the parts 4 of the resilient support members (see col. 11, lines 13-50).

Regarding claim 2, the compensating unit 242 comprises a pair of flat bars each having both ends fixed to the supports 24 of the resilient support members (see Fig. 7).

Regarding claim 4, the first and second support members each comprise a keeper 231 supporting the mask and a flange portion 232 that extends inward from the edge of the keeper. The compensating unit 242 comprises a pair of flat bars each having both ends fixed to the respective flanges (see Fig. 7).

Regarding claim 5, the compensating unit 242 comprises a pair of flat bars each having both ends fixed to respective ends of the first and second support members (see Fig. 7).

Regarding claim 10, Fig. 7 of the Ito reference discloses the first and second support members comprising a keeper 231 supporting the mask and a flange 232 extending inward from the edge of the keeper. The compensating unit 242 comprises a pair of bars each having both ends fixed to the keepers 231.

Regarding claims 23 and 39, Fig. 7 of the Ito reference discloses a mask frame assembly for a color cathode ray tube, comprising first and second support members 231 spaced out a predetermined distance. Fig. 7 teaches the use of first and second resilient support members installed between the first and second support members supporting the first and second support members with each of the first and second resilient support members comprising supports 242 fixed to the first and second support members and a connection portion 2411 connecting the supports. A mask is installed at the first and second support members 231 such that tension is applied thereto. The mask has a plurality of electron beam through holes. The mask frame assembly further includes a compensating unit 4 connected between the first and second support members 231 (see col. 11, lines 13-50).

The recitation "so that the tension of the mask is transferred to the compensating unit during the annealing of the frame and the mask and then the tension is re-transferred from the compensating means unit to the mask after cooling, thereby maintaining an initial tension of the mask" has not been given patentable weight because it is considered an intended used recitation. It has been held that a recitation with respect to the manner in which a claimed apparatus is

intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

Regarding claim 40, the functional language that the compensating unit maintains the tension during an annealing process of the mask has not been given patentable weight because it is narrative in form. In order to be given patentable weight, a functional recitation must be expressed as a “means” for performing the specified function, as set forth in 35 U.S.C. § 112, 6th paragraph, and must be supported by recitation in the claim of sufficient structure to warrant the presence of the functional language. *In re Fuller*, 1929 C.D. 172: 388 O.G. 279.

Furthermore, it is believed that the compensating unit taught by Ito performs the same function.

Regarding claim 31, the bars 242 are fixed to surfaces of the supports of the first and second resilient support members which face the supports 24 of the other one of the first and second resilient support members.

Claims 1, 23, and 39-40 is rejected under 35 U.S.C. 102(e) as being anticipated by Diven et al. (US 6,590,326).

Regarding claim 1, Fig. 3 of the Diven reference discloses a mask frame assembly for a color cathode ray tube, comprising first and second support members 302 spaced out a predetermined distance. Fig. 3 teaches the use of first and second resilient support members 324 installed between the first and second support members supporting the first and second support members with each of the first and second resilient support members comprising supports 304 fixed to the first and second support members and a connection portion 306 connecting the supports 304. A mask is installed at the first and second support members such that tension is

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applied thereto. The mask has a plurality of electron beam through holes. The mask frame assembly further includes a compensating unit 308 connected between the first and second support members that has a lower thermal expansion coefficient than the resilient support members (see col. 3, lines 27-28 and 52-54).

Regarding claims 23 and 39, Fig. 3 of the Diven reference discloses a mask frame assembly for a color cathode ray tube, comprising first and second support members 302 spaced out a predetermined distance. Fig. 3 teaches the use of first and second resilient support members 324 installed between the first and second support members supporting the first and second support members with each of the first and second resilient support members comprising supports 304 fixed to the first and second support members and a connection portion 306 connecting the supports 304. A mask is installed at the first and second support members such that tension is applied thereto. The mask has a plurality of electron beam through holes. The mask frame assembly further includes a compensating unit 308 connected between the first and second support members that has a lower thermal expansion coefficient than the resilient support members (see col. 3, lines 27-28 and 52-54).

The recitation "so that the tension of the mask is transferred to the compensating unit during the annealing of the frame and the mask and then the tension is re-transferred from the compensating means unit to the mask after cooling, thereby maintaining an initial tension of the mask" has not been given patentable weight because it is considered an intended used recitation. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

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Regarding claim 40, the functional language that the compensating unit maintains the tension during an annealing process of the mask has not been given patentable weight because it is narrative in form. In order to be given patentable weight, a functional recitation must be expressed as a “means” for performing the specified function, as set forth in 35 U.S.C. § 112, 6th paragraph, and must be supported by recitation in the claim of sufficient structure to warrant the presence of the functional language. *In re Fuller*, 1929 C.D. 172: 388 O.G. 279.

Furthermore, it is believed that the compensating unit taught by Diven performs the same function (see abstract).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-9, 11, 13-15, 18-21, 25, 27-30, 32, and 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (US 5,751,098).

Regarding claims 6-9, 27-28, 32, and 35, Ito does not specifically teach the use of brackets extending from the support members or the use of screws for fixing the compensating unit. Nor does Ito specifically teach the compensating unit connected to a surface of the flange that faces towards or away from the mask or to surfaces of the supports that face away from each other. However, it is noted that the applicant's specific location of the compensating unit being fixed to a surface of the flange that faces towards or away from the mask or to surfaces of the supports that face away from each other, or the compensating unit being fixed to brackets, does

not solve any of the stated problems or yield any unexpected result that is not within the scope of the teachings applied. Therefore it is considered to be a matter of choice, which a person of ordinary skill in the art would have found obvious to select any method (using screws, brackets, welding, etc.) and any surface (keepers, flanges, supports, etc.) for fixing the compensating unit as long as the compensating unit is firmly fixed between the first and second support members.

Regarding claim 33, the bars 242 are fixed to surfaces of the supports of the first and second resilient support members which face the supports 24 of the other one of the first and second resilient support members.

Regarding claims 13-14, Fig. 7 of the Ito reference discloses a mask frame assembly for a color cathode ray tube, comprising first and second support members spaced out a predetermined distance. Fig. 7 teaches the use of first and second resilient support members installed between the first and second support members supporting the first and second support members with each of the first and second resilient support members comprising supports 24 fixed to the first and second support members and a connection portion 4 connecting the supports. A mask is installed at the first and second support members such that tension is applied thereto. The mask has a plurality of electron beam through holes. The mask frame assembly further includes a compensating unit 242 connected between the first and second support members that has a lower thermal expansion coefficient than the parts 4 of the resilient support members (see col. 11, lines 13-50).

Regarding the limitation of values of a mask assembly that satisfy relation of 0.1 less than or equal to $(A \times H^2 \times \delta\alpha \times 10^4) / I$ less than 1, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only

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routine skill in the art. *In re Aller*, 105 USPQ 233. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a working range for the claimed device, since optimization of workable ranges is considered within the skill of the art.

Regarding claims 11, 21, and 25, Ito does not specifically teach a shadow mask that has a larger thermal expansion coefficient than the compensating unit or being equal to the first second resilient support members.

It is noted that the applicant's specific limitation of the shadow mask's thermal expansion coefficient being greater than the compensating unit and being greater than or equal to the first second resilient support members, does not solve any of the stated problems or yield any unexpected result that is not within the scope of the teachings applied. Therefore it is considered to be a matter of choice, which a person of ordinary skill in the art would have found obvious to select any material for the shadow mask.

Regarding claim 15, the compensating unit 242 comprises a pair of flat bars each having both ends fixed to the supports 24 of the resilient support members (see Fig. 7).

Regarding claim 18, the first and second support members each comprise a keeper 231 supporting the mask and a flange portion 232 that extends inward from the edge of the keeper. The compensating unit 242 comprises a pair of flat bars each having both ends fixed to the respective flanges (see Fig. 7).

Regarding claim 19, the compensating unit 242 comprises a pair of flat bars each having both ends fixed to respective ends of the first and second support members (see Fig. 7).

Regarding claim 20, 29-30, 34 Ito does not specifically teach the use of brackets extending from the support members for fixing the compensating unit. Nor does Ito specifically

teach the compensating unit connected to a surface of the flange that faces towards or away from the mask or to surfaces of the supports that face away from each other. However, it is noted that the applicant's specific location of the compensating unit being fixed to a surface of the flange that faces towards or away from the mask or to surfaces of the supports that face away from each other, or the compensating unit being fixed to brackets, does not solve any of the stated problems or yield any unexpected result that is not within the scope of the teachings applied. Therefore it is considered to be a matter of choice, which a person of ordinary skill in the art would have found obvious to select any surface (keepers, flanges, supports, brackets, etc.) for fixing the compensating unit as long as the compensating unit is fixed between the first and second support members.

Claims 3, 16, 17, 24, and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (US 5,751,098) as applied to claims 1, 13, and 23 above, and further in view of Ichigaya et al. (US 4,798,992).

Regarding claims 3, 16, 17, 24, and 36-38 the use of dampening devices to reduce vibrations is well known in the art as evidenced by Ichigaya (col. 8, lines 40-69).

It is noted that the specific form of the vibration reduction unit comprising at least one via-hole formed at each bar and a corresponding vibration preventing member shakably installed in the via-hole does not solve any of the stated problems or yield any unexpected result that is not within the scope of the teachings applied. Therefore it is considered to be a matter of choice, which a person of ordinary skill in the art would have found obvious to select any type (spring, damping wire, etc.) of vibration reduction unit for preventing the compensating unit from vibrating.

Furthermore, the specification of the present application, page 16, lines 7-9 teaches that anything having a structure capable of preventing the compensating unit from vibrating can be used.

Rejections above apply.

Claims 12, 22, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (US 5,751,098) as applied to claims 1, 13, and 23 above, and further in view of Kim et al. (US 6,437,496).

Regarding claims 12, 22, and 26, Ito does not specifically teach mask using dummy bridges. However, Kim teaches that if the vertical pitch of the tie bars is too large, that is, if the vertical pitch of the tie bars is twice or more the horizontal pitch thereof, a reflection image of the tie bars is shown on the screen, which is unpleasant to viewers. To avoid this problem, U.S. Pat. No. 4,926,089 discloses a tensioned mask that includes a plurality of strips separated by slits having a predetermined pitch, and tie bars (real bridges) which interconnect the adjacent strips. Also, dummy bridges, which extend partially between but not interconnecting adjacent strips, are disposed between the adjacent tie bars to separate each slit into sub-slits having a predetermined interval (col. 1, lines 29-45).

Accordingly, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used a mask as taught by Kim so as to prevent a reflection image of the tie bars from appearing on the screen.

Claims 2, 4-9, 11, 13-15, 18-21, 25, 27-30, 32, and 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Diven et al. (US 6,590,326).

Regarding claims 13-14, Fig. 3 of the Diven reference discloses a mask frame assembly for a color cathode ray tube, comprising first and second support members 302 spaced out a predetermined distance. Fig. 3 teaches the use of first and second resilient support members 324 installed between the first and second support members supporting the first and second support members with each of the first and second resilient support members comprising supports 304 fixed to the first and second support members and a connection portion 306 connecting the supports 304. A mask is installed at the first and second support members such that tension is applied thereto. The mask has a plurality of electron beam through holes. The mask frame assembly further includes a compensating unit 308 connected between the first and second support members that has a lower thermal expansion coefficient than the resilient support members (see col. 3, lines 27-28 and 52-54).

Regarding the limitation of values of a mask assembly that satisfy relation of 0.1 less than or equal to $(A \times H^2 \times \Delta\alpha \times 10^4) / I$ less than 1, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a working range for the claimed device, since optimization of workable ranges is considered within the skill of the art.

Regarding claims 2, 4-10, 15, 18-20, 27-35, Fig. 3 of the Diven reference discloses the first and second support members comprising a keeper 302 supporting the mask and a flange 312 extending inward from the edge of the keeper. The compensating unit 308 comprises two pair of bars each having one of their ends fixed to the support members. Diven does not specifically teach each of the compensating units having both ends fixed to the flanges of the first and second

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support members. Nor does it specifically teach the use of brackets for fixing the compensating unit. However, it is noted that the applicant's specific location of the compensating unit being fixed to the flanges (facing or facing away from the supports) of the support members or the compensating unit being fixed to brackets, does not solve any of the stated problems or yield any unexpected result that is not within the scope of the teachings applied. Therefore it is considered to be a matter of choice, which a person of ordinary skill in the art would have found obvious to select any method (using screws, brackets, welding, etc.) and any surface (keepers, flanges, supports, etc.) for fixing the compensating unit as long as the compensating unit is firmly fixed between the first and second support members.

Regarding claims 11, 21, and 25, Diven teaches the resilient support members being made of steel and the compensating unit made of Invar®. Diven et al. does not specifically teach a shadow mask that has a larger thermal expansion coefficient than the compensating unit or being equal to the first second resilient support members.

However, shadow masks made of steel are well known in the art. It is also well known in the art that steel is much cheaper than a lower expansion material such as Invar®, which is what the compensating unit is made of. Accordingly, one of ordinary skill in the art at the time the invention was made would have found it obvious to use a steel mask instead of one made of Invar® so as to reduce the cost of the device.

Claims 3, 16, 17, 24, and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Diven et al. (6,590,326) as applied to claims 1, 13, and 23 above, and further in view of Ichigaya et al. (US 4,798,992).

Regarding claims 3, 16, 17, 24, and 36-38 the use of dampening devices to reduce vibrations is well known in the art as evidenced by Ichigaya (col. 8, lines 40-69).

It is noted that the specific form of the vibration reduction unit comprising at least one via-hole formed at each bar and a corresponding vibration preventing member shakably installed in the via-hole does not solve any of the stated problems or yield any unexpected result that is not within the scope of the teachings applied. Therefore it is considered to be a matter of choice, which a person of ordinary skill in the art would have found obvious to select any type (spring, damping wire, etc.) of vibration reduction unit for preventing the compensating unit from vibrating.

Furthermore, the specification of the present application on page 16, lines 7-9 states that anything having a structure capable of preventing the compensating unit from vibrating can be used.

Rejections above apply.

Claims 12, 22, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Diven et al. (US 6,590,326) as applied to claims 1, 13, and 23 above, and further in view of Kim et al. (US 6,437,496).

Regarding claims 12, 22, and 26, Ito does not specifically teach mask using dummy bridges. However, Kim teaches that if the vertical pitch of the tie bars is too large, that is, if the vertical pitch of the tie bars is twice or more the horizontal pitch thereof, a reflection image of the tie bars is shown on the screen, which is unpleasant to viewers. To avoid this problem, U.S. Pat. No. 4,926,089 discloses a tensioned mask that includes a plurality of strips separated by slits having a predetermined pitch, and tie bars (real bridges) which interconnect the adjacent

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strips. Also, dummy bridges, which extend partially between but not interconnecting adjacent strips, are disposed between the adjacent tie bars to separate each slit into sub-slits having a predetermined interval (col. 1, lines 29-45).

Accordingly, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used a mask as taught by Kim so as to prevent a reflection image of the tie bars from appearing on the screen.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Anthony Perry* whose telephone number is **(571) 272-2459**. The examiner can normally be reached between the hours of 9:00AM to 5:30PM Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on **(571) 272-24597**. **The fax phone number for this Group is (703) 872-9306.**

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [Anthony.perry@uspto.gov].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly

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set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.



Anthony Perry
Patent Examiner
Art Unit 2879
March 10, 2004



Vip Patel
Primary Examiner
Art Unit 2879